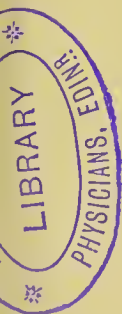


ON
THE UTERINE SOUND.

BY

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ON THE UTERINE SOUND.

THE introduction in practice of the Uterine Sound gives the clearest date for the birth of modern gynecology ; and no man is fitted to be a gynecologist who has not learned to appreciate and employ it. Before the sound came into definite use the physical diagnosis in pelvic diseases confined itself to abdominal palpation, percussion, and auscultation, supplemented by the exploration of the vaginal canal with the finger and the speculum. Some of the physiological or pathological changes in the uterus or ovaries might be thus recognised when enlargements took place which lifted them up out of the pelvis, or even the affections of the cervix uteri might be fairly exposed. But the greater proportion of those changes in the pelvic organs with which the last forty years have made medicine familiar were but vaguely guessed at, and many of them were quite unknown, until the sound came in to diagnose them. Its importance, however, lies not merely in the circumstance that it first enabled physicians to recognise, *e.g.*, important displacements of the uterus previously unsuspected. It was the first implement that was employed to bring the higher spheres of the sexual organs within range of the sense of touch, and its introduction led on directly and speedily to the employment of tents and other dilators, of volsellæ, and, above all, of the systematic bimanual exploration which so often renders its own use unnecessary now. Therefore it is that we regard it as the most distinctly epoch-making instrument in the gynecological armamentarium.

As the use of the sound was essential for the perfecting of gynecological diagnosis, the past and passing generation of gynecologists taught themselves by it how to recognise many of the morbid conditions which they have taught us to recognise by the unaided sense of touch. The uterine deviations, for example, were at first brought within the sphere of observation

and treatment by means of the sound. And although, with growing experience, the power has been acquired of easily and certainly differentiating a small fibroid from a retroflexion of the uterus by the bimanual examination of a patient, each new gynecologist has to confirm or correct for a time the results of his manual explorations, and teach his fingers what they really feel by the use of the sound; and to the end of his practice he will constantly meet with patients in whom he finds it necessary to employ it. Let me ask your attention to—

I. THE INFORMATION GAINED BY USE OF THE SOUND.

In the earliest memoir¹ published regarding the systematic employment of a sound, or bougie, or probe, for the investigation of uterine disease, the various directions in which it was to prove of service were very clearly indicated, and the experience of many years has confirmed the estimate first formed of its importance as an aid to diagnosis.

1. *Condition of the Cervix and its Orifices.*—The finger may feel, or, through the speculum, the eye may see that an os externum is abnormally small; but it requires the sound to tell us how far the narrowness extends, and whether the canal is expanded above. In some cases of fissuring and cicatrization at the os it is only by means of it that we can actually find out in what part of a furrow the orifice is seated. And where it passes easily through the lower part of the cervix it may, on the one hand, show us a contraction, or, on the other, an unusual expansion of the os internum.

2. *State of the Uterine Cavity.*—Passed up into the interior of the uterus, it sometimes lets us know that the cavity is occupied by a neoplasm or other substance, or tells us that it is empty.

3. *State of the Uterine Walls.*—When its point comes in contact with the fundus it may cause a sense of pain which helps the diagnosis of endometritis. The distinction between endocervicitis and endometritis may be further established by noticing the evidence of the internal vascularity from the sound having caused the escape of a drop or two of blood, or we feel roughnesses on the internal surface; or with the fingers pressed against the abdominal walls we may note that the uterine parietes are unusually thick or thin.

4. *Length of the Uterus.*—The experienced practitioner learns in the course of time to get a pretty accurate idea of the size of the uterus by means of a careful bimanual examination. There are various circumstances, however, such as the varying thickness of the abdominal walls, the varying degrees of resistance of the

¹ Sir James Y. Simpson's *Selected Obstetrical and Gynecological Works*, edited by Dr J. Watt Black, 1871, p. 604.

uterine tissues, etc., which may easily give rise to error; and there are cases where the organ cannot be felt in its outlines, and where, therefore, its size cannot be determined. In all these conditions the sound comes in to correct or confirm our impressions, or to give us the information which cannot otherwise be gained. The sound thus reveals, 1st, *Increase* in the length of the uterine cavity. The varying size of the puerperal uterus, *e.g.*, whether natural or morbid, can be measured by it. The persistent enlargement of sub-involution; the increase in the cavity so commonly associated with fibroid developments in the walls; and the peculiar hypertrophic elongation of the cervix which may so readily be confounded with simple descent of the uterus; all these are conditions the recognition of which is most directly effected by the use of the sound. On the other hand, 2nd, *Diminution* in the length of the uterus, as revealed by the sound, may enable us to recognise imperfect developments of the uterus or the atrophy of simple involution, while the observation that the point of it is arrested at every side around a body projecting through the external os enables us to differentiate an inversion of the uterus from an intra-uterine polypus in process of extrusion.

5. *Direction of the Uterus*.—The important part played in the production of pelvic distress by the deviations of the uterus from its natural position was first brought to light by the use of the sound. For the most part we can now diagnose them by bimanual examination. The practised fingers introduced into the vaginal canal can recognise the normal anterior inclination of the uterus, or a well-marked case of retroflexion; and when the vaginal touch is supplemented by abdominal palpation in a case where the abdominal walls are not too thick or resistant, this abdomino-vaginal exploration gives an amount of certainty in the diagnosis that leaves nothing to be desired. Such perfect outlining of the uterus with the fingers, however, is not always possible, and then we are compelled to tell ourselves how the fundus uteri is turned by noticing in what direction we can make the sound enter. And until the physician has learned how to use two fingers simultaneously in the vagina, keeping the one in contact with the os and cervix whilst the other moves about the body of the uterus, and has learned how at the same time to apply his other hand above the pubes so as to press the uterus more fully within reach of these exploring fingers, he will need to have recourse to the sound to satisfy himself as to the exact lie of the body of the uterus. And he will not have recourse in vain.

6. *Relations of the Uterus*.—Besides enabling us to determine these important matters concerning the uterus itself,—its canal, its cavity, its walls, its size, and its situation,—the sound gives us valuable information regarding the relation of the uterus to the pelvic contents. Thus in tumours springing from the pelvic organs it is sometimes difficult by simple manipulation to deter-

mine whether they be of uterine or ovarian origin. Now, apart from the importance of the accurate determination of change in the length of the uterus which we can make with the sound, it tells whether the tumour springs from the uterine walls or is of independent origin. For, in the case of a uterine tumour, whether it be still pelvic or have grown abdominal, a sound passed into the uterine cavity is felt or seen to be moved about under the motions impressed on the neoplasm through the abdominal walls; or, conversely, the hand applied to the mass through the abdominal walls feels a movement imparted to it when the uterus is moved from side to side with the sound. On the other hand, a tumour which does not communicate its movements to the uterus, or which remains stationary when the uterus is pulled in different directions with the sound, has usually its seat in the ovary or other organ separate from the uterus.

II. THERAPEUTIC USES OF THE SOUND.

The instrument that serves such good purpose in the detection of some of the morbid conditions of the uterus is also occasionally useful for their treatment.

1. *Reposition of Displaced Uterus.*—By means of it we can very safely and simply lift up, *e.g.*, the retroverted uterus. I do not stay here to note the conditions justifying and demanding or contra-indicating reposition generally. I merely repeat what I have before stated in this Society and verified in practice a hundred times over, that an ordinary uterine sound properly used will replace the uterus as easily, and painlessly, and safely as any other appliance. I suppose I have tried all the various methods of reduction of the dislocated uterus that have from time to time been proposed, manipulative, postural, and instrumental, and I always find myself falling back on the use of the sound in preference to all the others. It is often absolutely necessary to keep up the uterus in proper position with the point of the sound whilst a vaginal pessary is slipped over the handle and introduced to keep the uterus permanently *in situ*.

2. *Relief of Dysmenorrhœa.*—In some cases of dysmenorrhœa the introduction of the sound for half an hour or so when menstruation is commencing wards off a patient's monthly pain.

3. *Relief of Amenorrhœa.*—In other cases of scanty menstruation, or where there is a tendency to more complete amenorrhœa, the flow will often be promoted or provoked by the sound passed for some days in succession at the menstrual epoch.

4. *Applications to Uterine Cavity.*—The sound may be used for carrying caustic up to the fundus uteri by being dipped in some nitrate of silver which has been melted in a watch-glass; or liquid medicaments of various kinds may be introduced by a film of cotton-wadding, which can be securely twisted round the sound if the point of it be first carefully moistened with water or glycerine.

5. *Starting Uterine Action.*—To induce premature labour in certain cases we may pass the sound between the ovum and the uterine walls; and where the indication arises in earlier months for procuring abortion, the surest and safest method is to pass a sound into the cavity of the ovum.

III. CHARACTERS OF A SERVICEABLE SOUND.

For exploratory purposes different kinds of rods may be used for probing or sounding the uterus. A gum elastic male catheter or bougie may, in an emergency, be used in any case; and where the uterine canals have become tortuous as well as elongated, as in some of the cases of uterine fibroids, such a flexible sound is the best we can employ, and is sometimes the only one that will worm its way through the sinuosities so as to enable us truly to measure the length of the cavity.

An ordinary surgical probe has sometimes yielded the necessary information; and where the external orifice has become partially obliterated, such a fine rod may discover a pervious os which is yet too contracted to allow of the passage of the ordinary sound.

In cases of hæmorrhage where there is a suspicion of the presence of fragments of ova, or polypoidal endometritis, or cancerous degeneration, and where, accordingly, we have a desire to obtain a scraping from the inner wall of the uterus, we may at once introduce a curette. I sometimes thus use a Recamier's (see Fig. 1) or Thomas's (see Fig. 2) curette as a sound. But I think it important to note that with this in view I have added to the stem of these curettes a ridge at two and a half inches from the point, so as to enable us easily to appreciate the depth to which it has passed within the uterus. The presence of this ridge in no way interferes with the working of it as a curette. On the contrary, even when we have otherwise previously ascertained the size of the uterine cavity, it is a comfort to know precisely at what depth within it the curette is clearing away any projections from its surface, and this knowledge we obtain at once in using a curette so marked.

But for systematic investigation of the pelvic organs a sound of special construction is required. The qualities of a serviceable sound were correctly given in the well-known essay of Sir James Simpson to which I have already referred (see Fig. 3). It has sometimes been alleged that he used an inflexible instrument. Certainly he used for the most part sounds made of German silver, a metal which at the time seemed to him to have the advantage of being cheaper than silver and less liable to corrosion than copper, though it was less flexible than either of these metals. But his sound was not the rigid, inflexible instrument it is sometimes represented as being. In his own hands every hour its curve was undergoing change. The flexibility which is desiderated, however, in combination with cleanliness, in a not too costly instru-

ment, is best found in a sound made of copper and plated with silver, and such is the material of which, in recent years, I have got my sounds made.

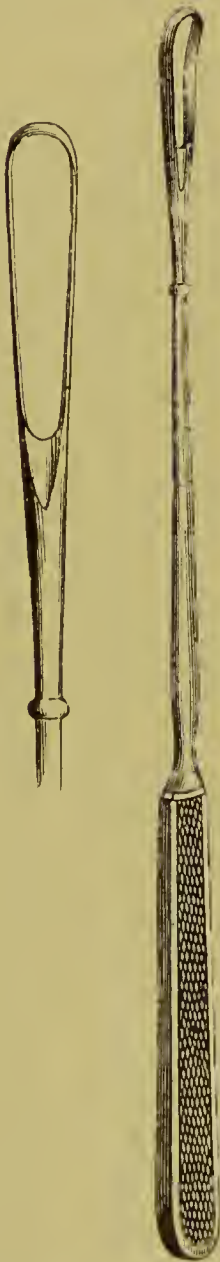


FIG. 1.—Recamier's steel curette, with a ridge $2\frac{3}{4}$ " from the point. The figure to the left shows the end of the curette full size.

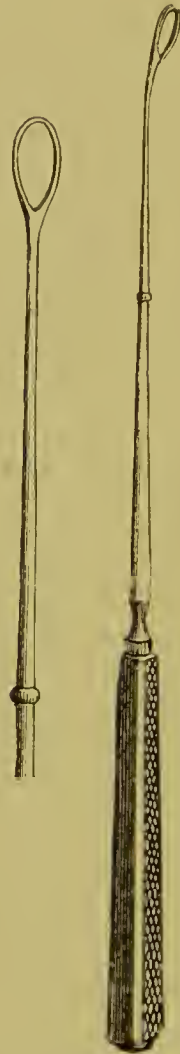


FIG. 2.—Thomas's dull copper curette, with a ridge $2\frac{1}{2}$ " from the point. The figure to the left shows the end of the curette full size.

Apart from the question of the best material for the construction of the sound, there are some little modifications in the markings

and in the make of it which seem to me sufficiently important to justify me in bringing them as I now do under your notice.



FIG. 3.—Sir James Simpson's Original Uterine Sound.

1. *Markings*.—The most important of all the measuring marks on the sound, that which renders a rod distinctively fit for use in uterine exploration, is the mark placed at $2\frac{1}{2}$ inches from the point. In the sounds first employed this was indicated by a knob placed on the convexity of the instrument. It was often troublesome to feel this knob after the sound had passed into the cavity and the guiding finger happened to be in relation to the concavity of the instrument and had to be twisted round to touch the knob. Hence sounds have been made with the knob on the concavity of the sound or to one side of it. Some twenty or more years ago, with my uncle's consent, I directed the instrument maker to make the $2\frac{1}{2}$ -inch mark in the form of a circular ridge running all round the stem, instead of the simple knob. This slight modification has the great advantage of enabling the gynecologist readily to appreciate the progress of the sound through the canals, for the finger easily feels the ridge as it slides along the surface, whether the finger be in contact with its convexity, its concavity, or one of its sides.

I have said that the $2\frac{1}{2}$ -inch ridge is the all-important measuring mark on the uterine sound. Some of the marks that have usually been made on it may as well be eliminated. The notch, for instance, at $1\frac{1}{2}$ inches from the tip is of no practical value, and so weakens the sound that it easily breaks across at it. Then the higher measurements are required only in cases of quite exceptional rarity. Hence a sound for general use requires, in addition to the prime ridge, only a double ridge two inches from the first, at $4\frac{1}{2}$ inches from the point; between these a shallow circular notch to measure readily the frequent $3\frac{1}{2}$ -inch enlargement of the uterus; and perhaps a second shallow notch at $5\frac{1}{2}$ inches from the point. These are all the markings that I find needful in the great run of cases, and they are easily distinguished in the sound which I ordinarily employ (see Fig. 4).



FIG. 4.

2. *Construction of the Sound*.—It will at once strike you that the sound which I show you now is shorter than the one with

which you have been long familiar. Now this shortening is not a mere matter of convenience to render the instrument more portable. If you look at it again you will see that the handle is changed in its form. Instead of becoming narrowed towards the point of junction with the stem, it has the form of an elongated square, with the stem springing from the centre of one end. The importance of this shortening of the stem and broadening of the handle becomes apparent when you take the sound in one hand and hold it with the index tip just touching the $2\frac{1}{2}$ -inch ridge, the very relation to it which in most cases the finger obtains after the sound has been passed into the uterus (see Fig. 5). You will

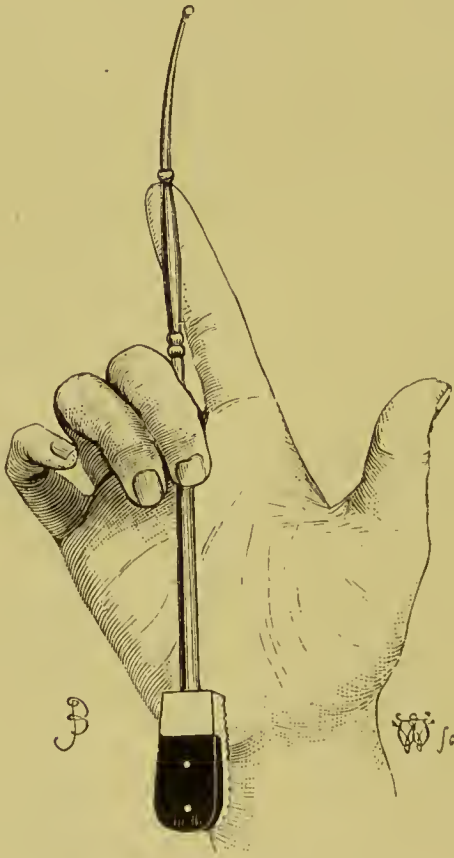


FIG. 5.—Shows adaptation of square handle of the 8-inch sound to the hypothenar eminence when the tip of the index finger touches the knob at $2\frac{1}{2}$ inches from the point.

see that the handle rests squarely on the hypothenar eminence, and the hand has thus complete control over it in all its movements. If you attempt to make a bimanual examination of the uterus, applying the left hand above the pubes whilst the right holds a long-stemmed and narrow-handled sound in utero, you find that the hand has no adequate control over the movements impressed on the sound. When the uterus is moved by the supra-pubic hand, the sound rolls round in the hand that holds it; and if you

wish to move the uterus by means of the stem, the finger must be withdrawn from the cervix so as to get the grasp of the handle that will enable you to impress on it the desired movement. With a square-handled sound the bimanual explorations become easier and more exact.

Different practitioners may prefer different lengths of sound. For most cases a stem that measures $5\frac{1}{2}$ inches from the $2\frac{1}{2}$ -inch ridge to the junction with the handle will be found of convenient length.

IV. MODE OF USING THE SOUND.

In every case where the sound is to be used the practitioner will have made a careful digital and bimanual exploration of the condition of the pelvic organs. He would not be warranted in introducing a sound without such preliminary investigation, nor would his mind be prepared to appreciate what the sound could reveal. He may then use the sound in one or other of two ways.

1. *Guided by the Eye*.—He may first expose the vaginal portion of the uterus with a speculum, and watch the progress of the sound with his eye. The only satisfactory kind of speculum for employment in concert with the sound is the Sims's, or some modification of his duck-bill or spatular speculum. The patient is placed in the semi-prone position, and when the posterior wall of the vagina has been pulled back with the speculum—held by an assistant if it be not self-retaining,—the examiner lays hold of the anterior lip of the cervix with a volsella or tenaculum, which he holds in his left hand, and then with his right he passes the sound on through the exposed and fixed uterine orifice (see Fig. 6). Where a practitioner is baulked in the effort to pass a sound guided with the fingers, he may have recourse to this mode of introducing it; or he may from the first prefer so to apply it, as in cases of uterine hypertrophy where he has already exposed the cervix and wishes simply to ascertain the size of uterus, the calibre of its canals, or the condition of its cavity, as a preliminary to curetting or making some application to its interior.

2. *Guided by the Finger*.—When the sound is to be introduced under the guidance of the finger, as in most cases it requires to be, the patient should be placed on her left side, with the knees drawn up in the usual British obstetric position. It is quite possible to introduce a sound into a patient lying on her back; but the process is not so easy, and, unless the nates have been brought over the edge of the bed or couch on which the patient is placed, the surface of the bed interferes with the free play of the handle of the instrument. The index of the right hand should be passed into the vagina till the tip of it is in contact with the os externum. I say the index alone, for even when we have had two fingers in the canal, as in most instances we require to have in order fully to appreciate the results of tactile exploration, it is necessary to withdraw the medius and guide the sound with the single finger.

It is enough, and the presence of the second finger in the canal in this stage makes it more difficult to turn the sound round in the vaginal canal. The sound, grasped by its handle with the left hand, is carried along the palm of the right hand and palmar aspect of the index until its point reaches and enters the os externum. It may be introduced through the vaginal canal with its point and the rough metallic surface of the handle turned towards the sacrum. Usually, when the point is engaged in the cervical canal, the handle has to be swept round so as to direct the point and concavity of the sound forward. No force must be

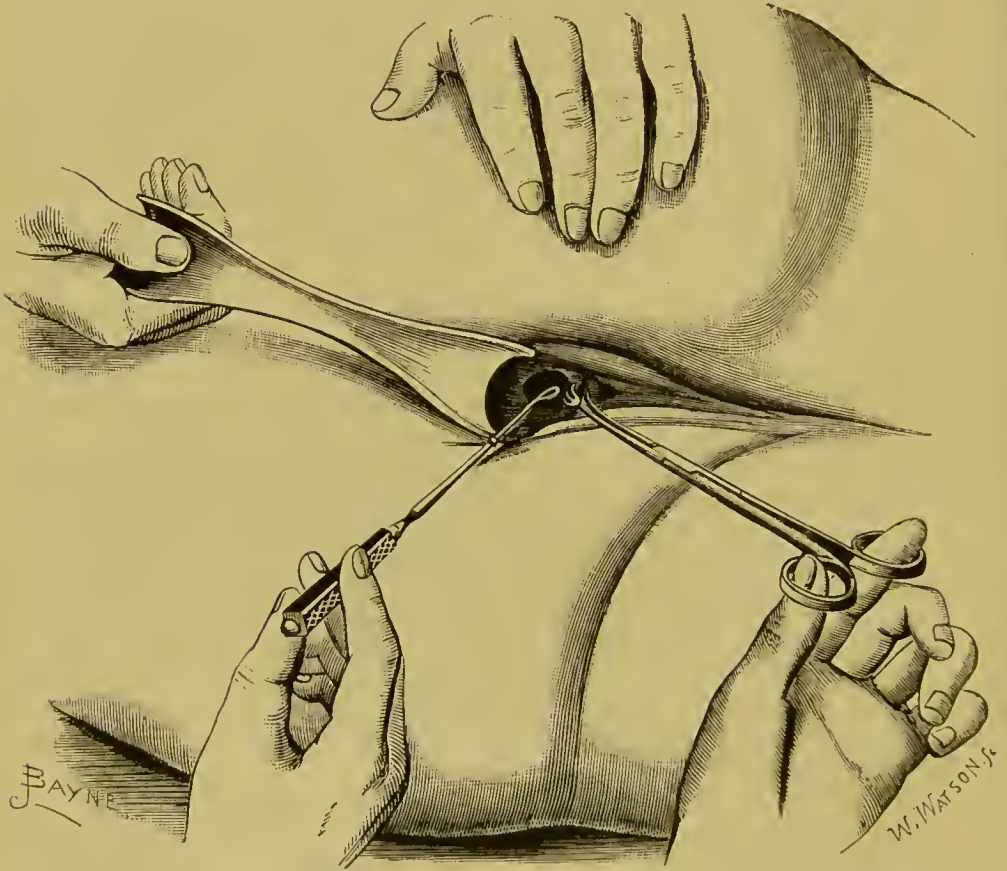


FIG. 6.—Shows the mode of introducing a sound or curette when the cervix uteri is exposed with a spatular speculum and fixed with a volsella.

used at any time in carrying on the sound through the canals. I insist on this. To push on the sound in any case with a force that would come near bending even a fine silver sound is, in my judgment, reprehensible. When the external os has been cleared, the part at which, in most instances, any difficulty is experienced is in the upper portion of the cervical canal, at, or just below the os internum. The difficulty usually depends on change in the curve of the canal, and is to be overcome, not by the use of force which simply hurts the patient and hinders the exploration, but

by delicate changes in the direction in which the instrument is carried forward. In a large proportion of the most difficult cases what is needed is to press the handle backwards against the perinæum, and in some instances the sound should be withdrawn and have its curve deepened towards the point. It certainly requires some patient practice and distinct determination at first to succeed in introducing the sound in difficult cases; but when the necessary dexterity has been acquired, one feels that the trouble taken in a few early cases is well rewarded through all the subsequent years of practice.

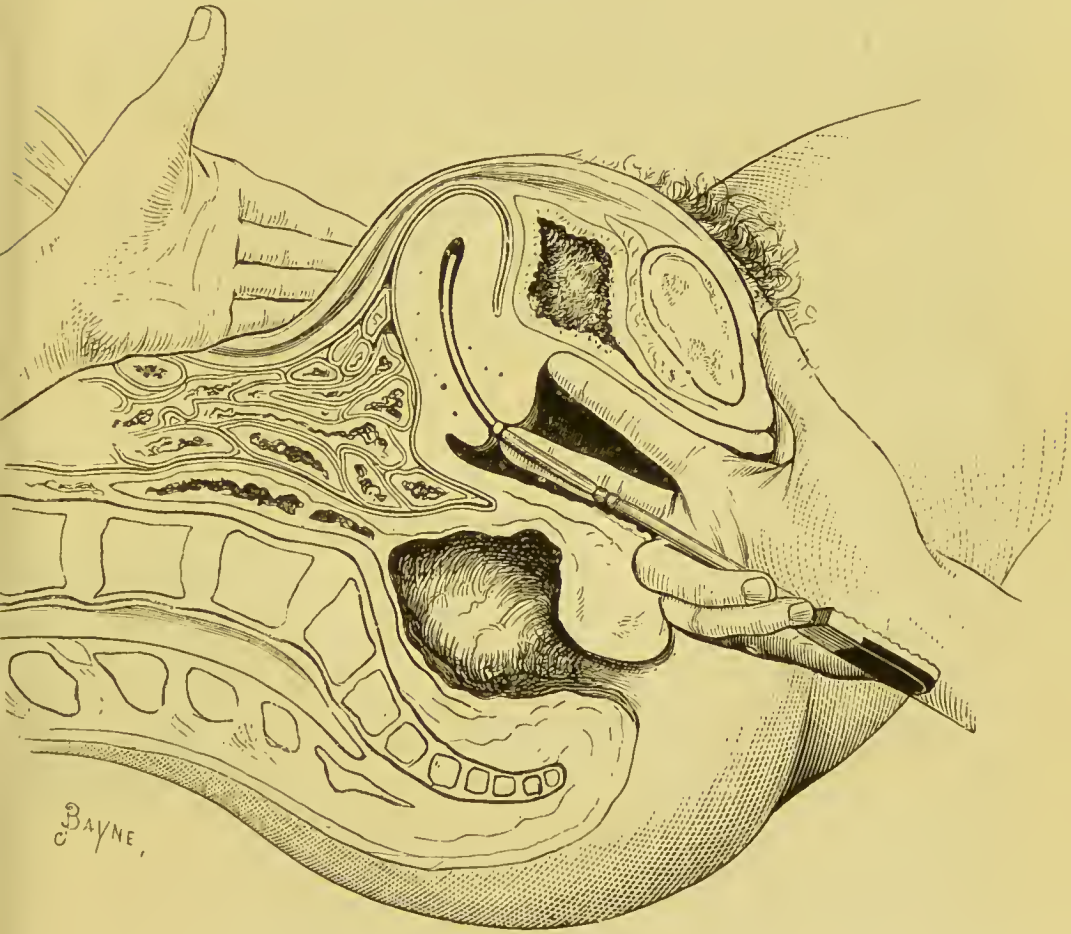


FIG. 7.—Shows the bimanual exploration of the uterus with the sound in the uterine cavity.

I have said that the sound is introduced by means of the left hand, whilst the point of it is guided by the index of the right. But I wish specially to emphasize the observation that we do not ascertain all that the sound guides us to by merely passing it into the uterine cavity. We ought to repeat our bimanual exploration with the sound retained in utero. Two right hand fingers may, and ordinarily should, now be in the vaginal canal; and the left hand is

pressed down into the pelvis through the abdominal parietes (see Fig. 7). The patient may be made to change her position so as to lie more supine or more prone, or even in the genu-pectoral posture. If the sound be of the construction that I have indicated as most convenient for such combined exploration, it is easily held in position by the little finger of the right hand; and as it lies flat and firm on the hypothenar eminence it can fix the uterus or move it in different directions, whilst the fingers in the vaginal roof and the left hand through the abdominal walls are able to appreciate changes in the size, form, and relations of the pelvic organs that cannot otherwise be detected. One chief object of this communication is to insist on the importance of this method of bimanual examination with the sound in utero, as in the text-books this valuable kind of exploration is never fully explained and seldom even hinted at.

V. CONTRA-INDICATIONS.

I have only a word to add regarding the contra-indications to the use of the sound. It must be employed with caution in all cases of chronic *inflammation* of the pelvic organs; and the active inflammations form an absolute bar to its introduction. It is not free from danger at a *menstrual* epoch, and in any case where there is a possibility of *pregnancy* its introduction would be gravely culpable.

